

Amendment to the claims

The pending claims are listed below.

1-432. (Previously cancelled)

433. (Previously amended) A nanoparticle having oligonucleotides are attached thereto, the oligonucleotides are attached to the nanoparticle in a aging process comprising (i) contacting the oligonucleotides with the nanoparticle in a first aqueous solution for a period of time sufficient to allow some of the oligonucleotides to bind to the nanoparticle; (ii) adding at least one salt to the first aqueous solution to create a second aqueous solution; and (iii) contacting the oligonucleotides and nanoparticle in the second aqueous solution for an additional period of time to enable additional oligonucleotides to bind to the nanoparticle.

434. (Previously amended) The nanoparticle of Claim 433 wherein the second aqueous solution has an ionic strength sufficient to overcome at least partially the electrostatic attraction or repulsion of the oligonucleotides for the nanoparticle and the electrostatic repulsion of the oligonucleotides to each other.

435. (Currently twice amended) The nanoparticle of Claim 433 wherein the oligonucleotides and nanoparticle [are] is contacted in aqueous solution for about 12 to about 24 hours.

436. (Previously added) The nanoparticle of Claim 433 wherein salt is added to the aqueous solution to form the aqueous salt solution which is buffered at pH 7.0 and which contains about 0.1 M NaCl.

437. (Currently twice amended) The nanoparticle of Claim 433 wherein the oligonucleotides and nanoparticle [are] is contacted in the second aqueous solution for an additional 40 hours to increase the density of oligonucleotides bound to the nanoparticle.

438. (Previously added) The nanoparticle of Claim 433 wherein the salt is added to the first aqueous solution in a single addition.

439. (Previously added) The nanoparticle of Claim 433 wherein the salt is added gradually to the first aqueous solution over time.

440. (Previously added) The nanoparticle of Claim 433 wherein the salt is selected from the group consisting of sodium chloride, magnesium chloride, potassium chloride, ammonium chloride, sodium acetate, ammonium acetate, a combination of two or more of these salts, one of these salts in a phosphate buffer, and a combination of two or more these salts in a phosphate buffer.

441. (Previously added) The nanoparticle of Claim 440 wherein the salt is sodium chloride in a phosphate buffer.

442. (Previously amended) The nanoparticle of Claim 433 wherein the oligonucleotides are bound to the nanoparticle through sulfur linkages.

443. (Previously amended) The nanoparticle of Claim 433 wherein the oligonucleotides are present on a surface of the nanoparticle at a surface density of at least 10 picomoles/cm².

444. (Previously amended) The nanoparticle of Claim 443 wherein the oligonucleotides are present on the surface of the nanoparticle at a surface density of at least 15 picomoles/cm².

445. (Previously amended) The nanoparticle of Claim 444 wherein the oligonucleotides are present on the surface of the nanoparticle at a surface density from about 15 picomoles/cm² to about 40 picomoles/cm².

446. (Currently twice amended) The nanoparticle of Claim 433 wherein the nanoparticle [are] is a metallic nanoparticle, a semiconductor nanoparticle, or a combination thereof.

447. (Previously amended) The nanoparticle of claim 446 wherein the metallic nanoparticle is made of gold, and the semiconductor nanoparticle is made of CdSe/ZnS (core/shell).

448. (Previously amended) The nanoparticle of Claim 433 wherein at least some of the oligonucleotides on the nanoparticle comprise at least one type of recognition oligonucleotides, each type of recognition oligonucleotides comprising a spacer portion and a recognition portion, the spacer portion being designed so that it is bound to the nanoparticle, the recognition portion having a sequence complementary to at least a portion of a sequence of a selected type of binding oligonucleotides.

449. (Previously amended) The nanoparticle of Claim 448 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a functional group through which the spacer portion is bound to the nanoparticle.

450. (Previously added) The nanoparticle of Claim 448 wherein the spacer portion comprises at least about 10 nucleotides.

451. (Previously added) The nanoparticle of Claim 450 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

452. (Previously added) The nanoparticle of Claim 448 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

453. (Previously amended) The nanoparticle of Claim 433 wherein at least some the oligonucleotides bound to the nanoparticle comprise at least one type of recognition

oligonucleotides, each type of recognition oligonucleotides comprising a sequence complementary to at least one portion of a sequence of a selected type of binding oligonucleotides; and a type of diluent oligonucleotides.

454. (Previously amended) The nanoparticle of Claim 453 wherein, each type of recognition oligonucleotides comprises a spacer portion and a recognition portion, the spacer portion being designed so that it is bound to the nanoparticle, the recognition portion having a sequence complementary to at least one portion of a sequence of a selected type of binding oligonucleotides.

455. (Previously amended) The nanoparticle of Claim 454 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a functional group through which the spacer portion is bound to the nanoparticle.

456. (Previously amended) The nanoparticle of Claim 454 wherein the spacer portion comprises at least about 10 nucleotides.

457. (Previously amended) The nanoparticle of Claim 456 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

458. (Previously added) The nanoparticle of Claim 454 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

459. (Previously added) The nanoparticle of Claim 454 wherein the diluent oligonucleotides contain about the same number of nucleotides as are contained in the spacer portions of the recognition oligonucleotides.

460. (Previously added) The nanoparticle of Claim 459 wherein the sequence of the diluent oligonucleotides is the same as that of the spacer portions of the recognition oligonucleotides.

461. (Previously added) A kit comprising the nanoparticle of any one of Claims 433, 448, or 453.